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Obvious and Hidden Reasons of Breast Cancer Cell Sensitivity to Antitumor RNase

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Abstract

© 2016, Springer Science+Business Media New York.Breast cancer is the second most common cancer in women, but chemotherapy and targeting antibodies possess certain side effects. Today's efforts are aimed to search of new effective methods of breast cancer treatment, especially triple-negative breast cancer, which cannot be affected by conventional therapeutics. Binase, the RNase secreted by Bacillus pumilus, possesses unusual biological activities as selective anticancer agent inducing apoptosis in malignant cells. Many aspects of this activity have been elucidated, but the details of its specific mechanisms remain unknown. Here, we found for the first time that the sensitivity of breast cancer cells to binase was not connected with the level of cellular RNA catalytic degradation. Gene expression analysis in different breast cancer cell lines and breast cancer cells from patient samples revealed that the PI3K/AKT pathway activity could be considered as a potential marker of binase effectiveness.

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Keywords

Apoptosis, Bacillus pumilus RNase, Binase, Breast cancer, BT-20, HBL-100, MCF-7, Oncogene expression, RNA content, RNase A, ZR-75-1